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INDUSTRIAL FISHERY PRODUCTS

SITUATION & OUTLOOK

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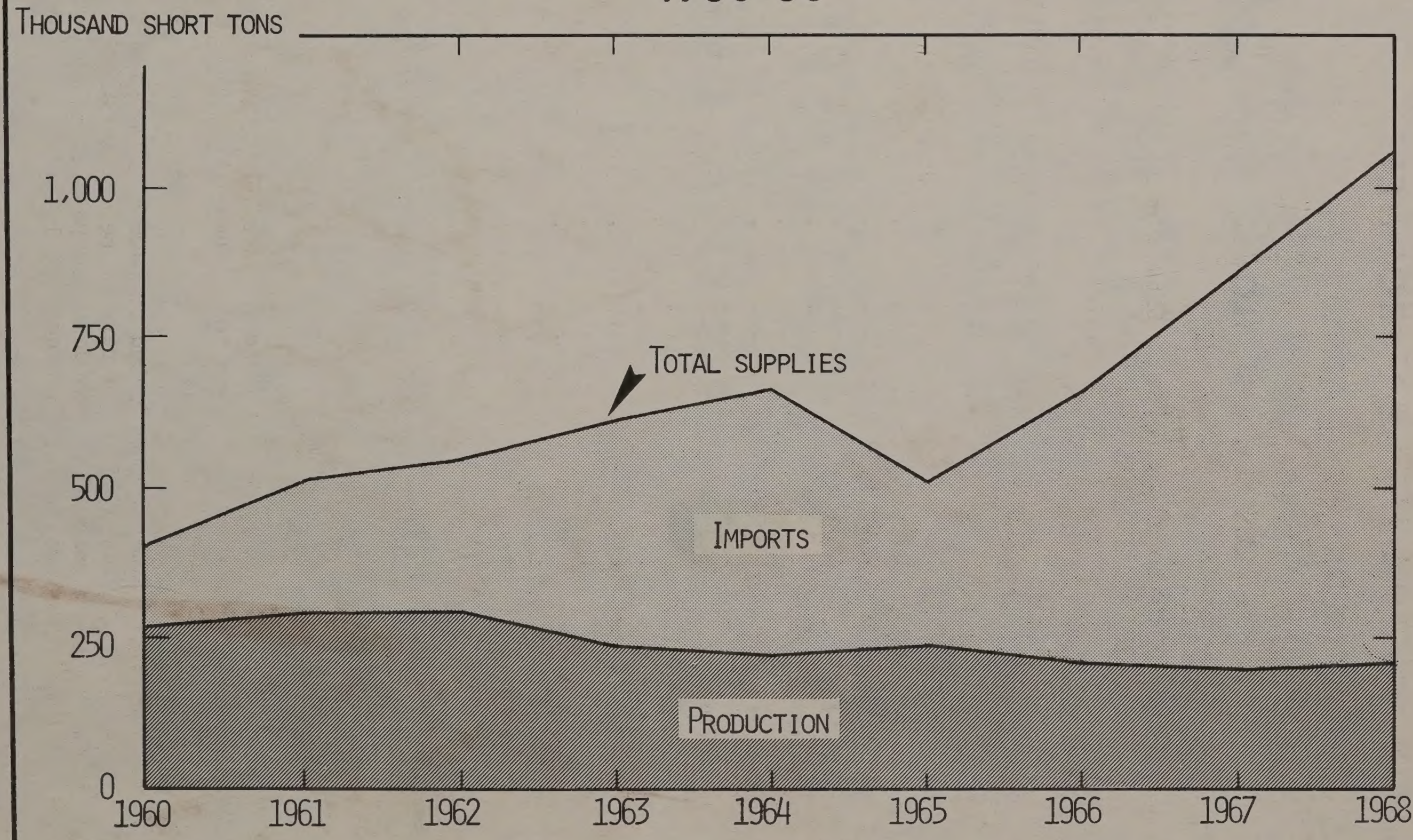
Current Economic Analysis · I5 · April 1969

1968 REVIEW

Published quarterly by: UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF COMMERCIAL FISHERIES

U.S. PRODUCTION, IMPORTS, AND TOTAL SUPPLIES OF FISH MEAL, 1960-68



U.S. Department of the Interior Neg. Econ. 269-69(4) Bureau of Commercial Fisheries

Figure 1

INDUSTRIAL FISHERY PRODUCTS

SITUATION AND OUTLOOK

Approved by the Bureau of Commercial Fisheries Situation and Outlook Board, April 15, 1969

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SUMMARY

FISH MEAL

The total amount of fish meal available for use in the United States in 1968 was slightly over 1 million tons[1]--nearly one-fourth more than the amount available in 1967.

The United States produced an estimated 203,400 tons of fish meal in 1968--up slightly from 1967 but 9 percent below the 1963-67 annual average. Nearly 70 percent of the domestic production came from menhaden in 1968--compared with 59 percent in 1967.

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[1]Short tons are used in this report unless otherwise specified.

Slightly over four-fifths of total U.S. supplies in 1968 were imports. Imports were 855,300 tons--about one-third more than in 1967 and nearly double the 1963-67 annual average. Nearly three-fourths of the imports came from Peru and about one-eighth came from Chile.

World production of fish meal (excluding Mainland China, Japan, and the U.S.S.R.) was an estimated 3,861,700 metric tons (4,256,800 short tons) in 1968. Eighty percent of this fish meal was made by FEO[2] countries, and about half was made by Peru alone. The United States made about 5 percent of recorded world meal in 1968.

FEO countries produced an estimated 3,078,600 metric tons (3,393,500 short tons) of fish meal in 1968, and exported 3,138,500 metric tons (3,459,600 short tons). Peru accounted for roughly two-thirds of FEO production and exports.

Stocks of fish meal held by FEO countries at the end of 1968 were down one-third from stocks held at the same time in 1967. These lower stocks contributed to the strengthening of world fish meal prices in the latter part of 1968.

The U.S. Department of Agriculture estimates that about 2.6 billion broiler chicks were placed on farms in the 22 major broiler-producing States in 1968 and that these chicks consumed about 12.1 million tons of feed. We estimate that 6 to 7 percent of this feed was fish meal. This estimate assumes that 70 to 80 percent of total fish meal was used in broiler feed last year. In 1967, an average of 5.2 percent of the broiler ration was fish meal.

The average annual price of bagged menhaden meal in 1968 was $145.30 per ton f.o.b. East Coast points, and the average price of Peruvian meal was $130.95 per ton. Prices of fish meal fell during July-October but were on the rise in the latter part of the year. One reason for the price rise at the end of 1968 was anticipated lower supplies due to the longshoremen's strike.

We estimate that 220,000 to 280,000 tons of fish meal will be used in the second quarter of 1969. This estimate assumes that 815.3 million broiler chicks will be placed in the second quarter of 1969 and that the current ratio between the price of fish meal and the price of soybean meal will hold throughout the second quarter.

Catches of anchoveta off Peru have been good the first few weeks of 1969, and the Norwegian fishery has improved substantially over

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[2]Fishmeal Exporters Organization; member countries are Angola, Chile, Iceland, Norway, Peru, South Africa, and South West Africa.

last year. If these trends continue into the second quarter of 1969, and if prices of fish meal in the United States are high relative to European prices, then supplies of fish meal to the United States in the second quarter could be substantially above those in 1968.

FISH SOLUBLES

The total amount of fish solubles available for use in the United States last year was 76,800 tons--the lowest amount recorded in recent years. About 98 percent of total supplies was produced domestically, and 2 percent was imported.

The demand for fish solubles in the United States in 1968 was relatively weak, as reflected in the low prices and declining use of that product. If prices continue at the current low level, it would appear that feed mixers should consider using a greater amount of fish solubles in their feed rations.

The total amount of fish solubles available for use in the second quarter of 1969 is estimated to be 22,000 to 25,000 tons.

FISH OIL

The total amount of fish oil available for export and domestic use in 1968 was 257.7 million pounds. About 31 percent of this amount represented stocks on hand at the beginning of the year, 67 percent was domestic production, and the rest was imports. Last year, the United States produced 171.7 million pounds of fish oil, 88 percent of which came from menhaden.

The United States used 30 million pounds of fish oil in 1968 in the production of fatty acids, lubricants, paints, plastics, resins, varnish, and other industrial products. Exports in 1968 were 65.1 million pounds--15 percent less than exports in 1967 and less than half the 1963-67 annual average. Most of the exports went to Sweden and the Netherlands.

The average annual price of menhaden oil in 1968 was 4.7 cents per pound f.o.b. East Coast plants--the lowest in 6 years. In the last half of December, the price of menhaden oil began to rise and by the end of March had reached an average of about 5.3 cents per pound.

The Bureau of Commercial Fisheries estimates that the production of fish oil in the second quarter of 1969 will be at least 35 million pounds, that domestic consumption will be 7 to 12 million pounds, and that exports probably will be less than 1 million pounds.

WHALE OIL

The total amount of whale oil available for use in the United States in 1968 was 127.2 million pounds. About 52 percent of this oil was beginning stocks, 47 percent was imports, and 1 percent was domestic production. Most of the imports in 1968 were from Japan.

The United States used 39.9 million pounds of whale oil in 1968 in the production of lubricants and other inedible products. Exports were 4.1 million pounds.

Economic research on the price and market structure of whale oil is now being conducted by the Bureau of Commercial Fisheries. Results of this research should aid in forecasting consumption and price levels of whale oil in the United States.

FISH MEAL

1968 REVIEW

Supply

Total Supply of Fish Meal in 1968--over 1 Million Tons

The total amount of fish meal available for use in the United States (excluding stocks, which are not reported) was 1,058,700 tons--up 24 percent from 1967 and up 60 percent from the 1963-67 annual average (table 1 and figure 1). Of these supplies, 81 percent was imports and 19 percent was domestic production.

Table 1.--Total fish meal available in the United States: production plus imports, by month, 1962-69[1]

Month	1962	1963	1964	1965	1966	1967	1968[2]	1969[2]
	Thousand short tons							
January	28.3	20.8	33.1	19.2	18.1	47.7	92.8	29.7
February	22.4	43.0	37.6	28.4	27.5	48.3	51.1	
March	22.7	43.2	43.2	57.5	39.2	79.1	58.5	
April	35.8	35.0	64.1	51.0	50.8	60.0	73.0	
May	65.8	71.4	91.6	55.6	55.3	56.2	87.0	
June	87.6	53.8	83.5	93.1	82.6	74.1	108.2	
July	81.5	82.1	74.1	68.8	85.5	84.0	132.5	
August	68.7	87.7	70.0	55.8	90.8	108.4	119.2	
September	45.4	60.0	56.9	27.9	66.5	76.0	75.4	
October	48.7	49.9	28.3	17.1	46.4	61.5	67.4	
November	22.1	30.8	36.4	17.8	54.7	78.4	84.3	
December	21.7	39.7	45.5	21.0	42.8	79.2	109.2	
Total[3]	550.7	617.4	664.3	513.0	660.2	852.9	1,058.7	

[1]Excludes meal made from shellfish.
[2]Preliminary.
[3]Figures may not add to total because of rounding.

U.S. Production of Fish Meal in 1968--Up Slightly from 1967

The United States produced an estimated 203,400 tons of fish meal in 1968--up 1 percent from 1967 but down 9 percent from the

1963-67 average (table 2). Nearly 70 percent of the domestic production came from menhaden in 1968--compared to 59 percent in 1967 (table 3). About 141,100 tons of menhaden meal were produced in 1968--up 18 percent from 1967 but down 9 percent from the 1963-67 average (table 4). Three-fifths of the menhaden meal was produced in the Gulf Coast area, while two-fifths was produced in the Atlantic Coast area--about the same breakdown as in 1967 (table 4).

About 13 percent of the fish meal was made from tuna scrap, mackerel, and anchovies in 1968--compared to 15 percent in 1967. The rest of the fish meal--17 percent--was made from alewives, groundfish, sea herring, thread herring, and other fish.

Table 2.--U.S. production of fish meal by month, 1962-69[1]

Month	1962	1963	1964	1965	1966	1967	1968[2]	1969[2]
	Thousand short tons							
January	2.9	2.3	2.1	3.2	2.8	5.7	1.9	2.5
February	3.6	2.9	2.3	2.9	2.3	3.9	2.1	
March	4.2	2.7	3.1	3.8	5.7	4.9	3.9	
April	9.4	8.4	8.1	11.3	11.3	10.1	10.7	
May	40.5	40.3	32.1	25.1	20.3	17.2	16.6	
June	61.2	35.3	49.0	48.6	36.9	33.5	27.3	
July	55.6	38.9	45.2	50.1	36.5	36.4	40.7	
August	40.4	43.7	33.5	42.0	31.4	33.6	31.9	
September	31.7	24.7	22.8	21.1	23.2	20.3	26.0	
October	36.0	18.5	8.6	12.3	11.0	11.4	18.6	
November	10.2	13.4	10.7	12.1	18.9	15.4	13.7	
December	2.7	10.0	7.7	9.8	12.0	9.0	9.9	
Total[3]	298.4	241.1	225.2	242.3	212.4	201.4	203.4	

[1]Excludes meal made from shellfish.
[2]Preliminary.
[3]Figures may not add to total because of rounding.

Table 3.--U.S. production of fish meal by raw material source, 1963-67 average, 1967, and 1968

Source	1963-67 average		1967		1968[1]	
	Thousand short tons	Percent	Thousand short tons	Percent	Thousand short tons	Percent
Alewives	2.4	1.1	5.1	2.6	2	-
Groundfish	9.0	4.0	5.7	2.8	2	-
Herring	10.1	4.5	9.5	4.7	2	-
Menhaden[3]	154.9	69.0	119.1	59.1	141.1	69.4
Tuna, mackerel, and anchovies	26.9	12.0	31.1	15.4	27.3	13.4
Unclassified	21.0	9.4	30.9	15.4	35.1	17.2
Total[4]	224.5	100.0	201.4	100.0	203.4	100.0

[1]Preliminary.
[2]Included in "unclassified."
[3]Includes a small quantity of other species.
[4]Figures may not add to total because of rounding.

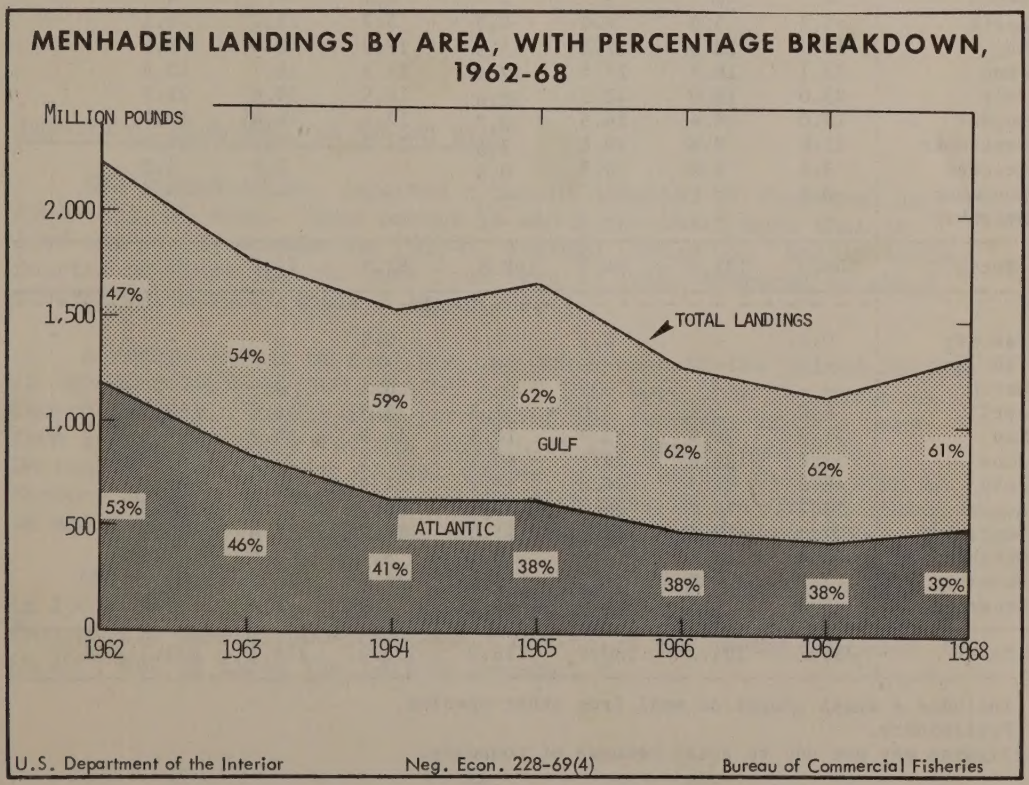


Figure 2

Table 4.--Production of menhaden meal by area and by month, 1962-69[1]

Month	1962	1963	1964	1965	1966	1967	1968[2]	1969[2]
	Thousand short tons							
	Atlantic Coast							
January	0.2	-	0.1	0.2	0.5	-	-	-
February	-	-	-	-	-	-	-	
March	-	-	-	-	-	-	-	
April	0.7	1.1	0.9	0.6	0.2	1.1	0.7	
May	18.0	12.8	5.4	3.9	1.1	1.9	2.6	
June	30.5	12.9	12.2	12.6	4.6	6.6	7.0	
July	23.2	13.5	11.7	8.8	6.0	6.0	10.5	
August	15.7	11.6	11.5	12.7	7.2	6.8	7.1	
September	12.3	9.8	7.2	7.5	5.8	3.5	4.9	
October	23.8	6.1	4.4	6.5	5.7	4.5	7.8	
November	6.5	8.9	7.2	8.5	14.8	10.2	9.2	
December	0.3	6.3	5.0	6.1	7.1	6.2	6.2	
Total[3]	131.2	83.0	65.6	67.4	53.0	46.9	55.9	
	Gulf Coast							
January	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	
March	-	-	-	-	0.1	-	-	
April	3.3	4.0	2.0	6.7	3.7	3.7	3.1	
May	13.9	22.0	17.3	14.9	12.9	8.4	8.9	
June	23.1	16.7	27.5	27.8	22.5	16.7	15.4	
July	25.0	18.0	22.3	30.4	18.9	18.6	21.7	
August	18.0	24.4	14.5	20.7	12.4	16.4	17.7	
September	15.0	9.8	10.8	7.5	11.4	7.5	14.3	
October	9.4	6.3	0.3	0.6	-	0.9	4.0	
November	0.8	[1]	-	-	-	-	-	
December	-	-	-	-	-	-	-	
Total[3]	108.5	101.2	94.7	108.6	81.9	72.2	85.2	
	Total[3]							
January	0.2	-	0.1	0.2	0.5	-	-	-
February	-	-	-	-	-	-	-	
March	-	-	-	-	0.1	-	-	
April	4.0	5.1	2.9	7.3	3.8	4.8	3.8	
May	31.9	34.8	22.7	18.8	14.0	10.3	11.5	
June	53.6	29.6	39.7	40.4	27.1	23.3	22.3	
July	48.2	31.5	34.0	39.2	24.9	24.7	32.2	
August	33.7	36.0	26.0	33.4	19.7	23.2	24.8	
September	27.3	19.6	18.0	15.0	17.2	11.0	19.2	
October	33.2	12.4	4.7	7.1	5.7	5.4	11.8	
November	7.3	8.9	7.2	8.5	14.8	10.2	9.2	
December	0.3	6.3	5.0	6.1	7.1	6.2	6.2	
Total[3]	239.7	184.2	160.3	176.0	135.0	119.1	141.1	

[1] Includes a small amount of meal from other species.
[2] Preliminary.
[3] Figures may not add to total because of rounding.

Table 5.--Menhaden landings by area, 1963-67 average, 1967, and 1968

Area	1963-67 average		1967		1968[1]	
	Million pounds	Percent	Million pounds	Percent	Million pounds	Percent
Middle Atlantic	137.2	9.3	38.2	3.4	74.0	5.5
Chesapeake	260.8	17.8	202.3	17.8	252.9	18.9
South Atlantic	200.5	13.6	192.7	17.0	190.5	14.2
Total Atlantic[2]	598.4	40.6	433.2	38.2	517.3	38.6
Gulf Coast	877.2	59.4	700.0	61.8	822.4	61.4
Total U.S.	1,475.6	100.0	1,133.2	100.0	1,339.7	100.0

[1]Preliminary.
[2]Figures may not add to total because of rounding.

Imports of Fish Meal--A Record High

The United States imported a record quantity of fish meal in 1968--855,300 tons. This amount is about one-third more than in 1967 and nearly double the 1963-67 average (table 6). Nearly three-fourths of these imports came from Peru in 1968--compared to about two-thirds in 1967 (table 7 and figure 3).

A record amount of meal for one month came to the United States in December 1968--99,300 tons or 7,600 tons more than the previous record in July. Eighty-four percent of the December imports came from Peru. Two major factors influenced the heavy imports in December: (1) higher fish meal prices in the United States than in Europe, and (2) efforts to stockpile fish meal in the United States in anticipation of the resumption of the longshoremen's strike.

Chile shipped 103,900 tons of fish meal to the United States in 1968--2½ times the amount shipped in 1967 (table 7). Imports from Norway were 41,000 tons--about one-third the amount imported in 1967 but 1½ times the 1963-67 average.

Table 6.--U.S. imports of fish meal by month, 1962-69

Month	1962	1963	1964	1965	1966	1967	1968[1]	1969[1]
	Thousand short tons							
January	25.4	18.5	31.0	16.0	15.3	42.0	90.9	27.2
February	18.8	40.1	35.3	25.5	25.2	44.4	49.0	27.6
March	18.5	40.5	40.1	53.7	33.6	74.1	54.7	
April	26.4	26.6	56.0	39.7	39.5	50.0	62.3	
May	25.3	31.1	59.5	30.5	35.0	39.0	70.4	
June	26.5	18.5	34.5	44.5	45.6	40.6	80.9	
July	25.9	43.2	28.9	18.7	49.0	47.6	91.7	
August	28.3	44.0	36.5	13.9	59.4	74.8	87.4	
September	13.7	35.3	34.1	6.8	43.3	55.7	49.3	
October	12.7	31.4	19.7	4.8	35.4	50.1	48.8	
November	11.9	17.4	25.7	5.7	35.7	63.0	70.7	
December	19.0	29.7	37.8	11.0	30.8	70.2	99.3	
Total[2]	252.3	376.3	439.1	270.7	447.8	651.5	855.3	

[1]Preliminary.
[2]Figures may not add to total because of rounding.

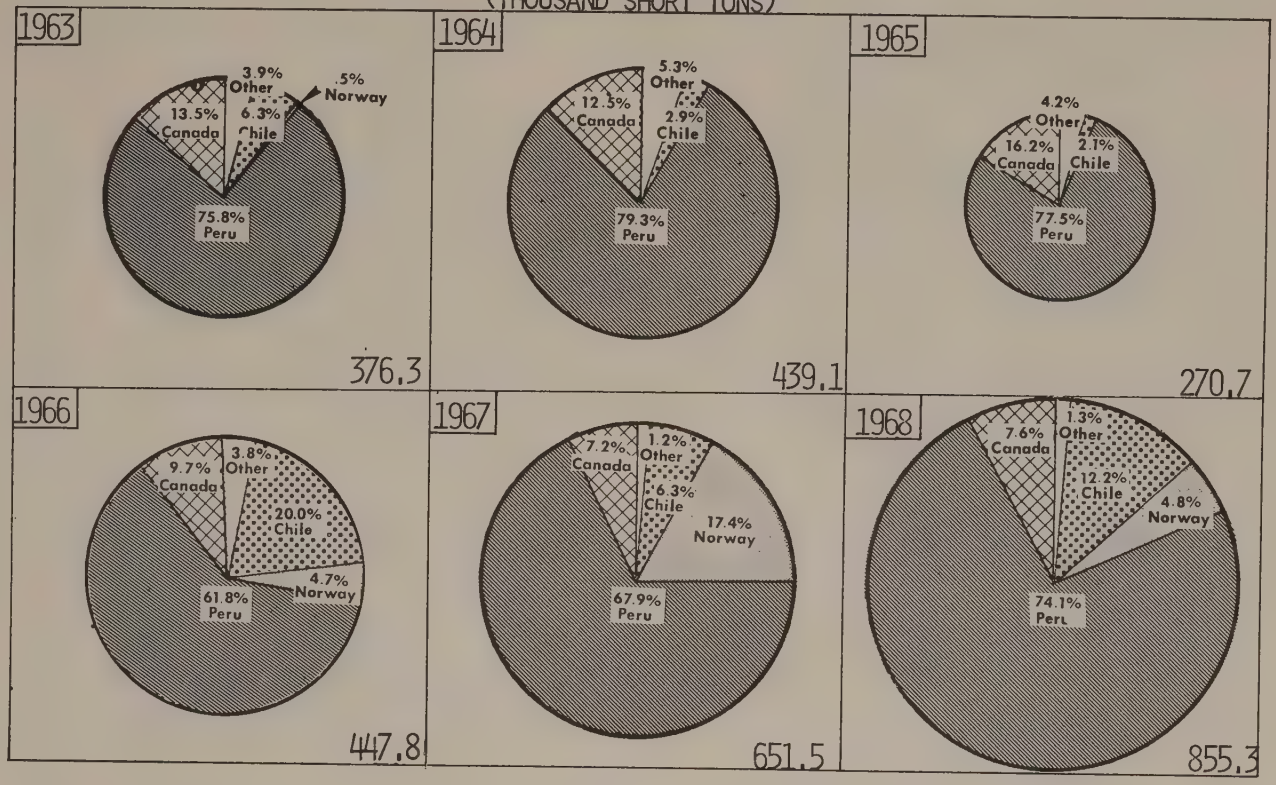
Table 7.--U.S. imports of fish meal by country of origin, 1963-67 average, 1967, and 1968

Country of origin	1963-67 average		1967		1968	
	Thousand short tons	Percent	Thousand short tons	Percent	Thousand short tons	Percent
Canada	48.0	11.0	46.6	7.2	65.1	7.6
Chile	34.5	7.9	40.9	6.3	103.9	12.2
Norway	27.2	6.2	113.2	17.4	41.0	4.8
Peru	312.5	71.5	442.5	67.9	634.2	74.1
South Africa and South West Africa	8.5	1.9	-	-	-	-
Other	6.4	1.5	8.1	1.2	11.1	1.3
Total[1]	437.1	100.0	651.5	100.0	855.3	100.0

[1]Figures may not add to total because of rounding.

U.S. IMPORTS OF FISH MEAL BY COUNTRY OF ORIGIN, 1963-68

(THOUSAND SHORT TONS)



U.S. Department of the Interior Neg. Econ. 262-69(4) Bureau of Commercial Fisheries

Figure 3

Table 8.--U.S. imports of fish meal as a percent of total fish meal available in the United States[1], by month, 1962-69

Month	1962	1963	1964	1965	1966	1967	1968	1969
	Percent							
January	89.8	88.9	93.6	83.3	84.5	88.0	98.0	91.6
February	83.9	93.2	93.9	89.8	91.6	91.9	95.9	
March	81.5	93.8	92.8	93.4	85.7	93.7	93.5	
April	73.7	76.0	87.4	77.8	77.8	83.3	85.3	
May	38.4	43.6	65.0	54.8	63.3	69.4	80.9	
June	30.2	34.4	41.3	47.8	55.2	54.8	74.8	
July	31.8	52.6	39.0	27.2	57.3	56.7	69.2	
August	41.2	50.2	52.1	24.9	65.4	69.0	73.3	
September	30.2	58.8	59.9	24.4	65.1	73.3	65.4	
October	26.1	62.9	69.6	28.1	76.3	81.5	72.3	
November	53.8	56.5	70.6	32.0	65.3	80.4	83.9	
December	87.6	74.8	83.1	52.4	72.0	88.6	90.9	
Average[2]	45.8	60.9	66.1	52.8	67.8	76.4	80.8	

[1]Production and imports.
[2]Weighted average.

World Fish Meal Production in 1968--Up 7 Percent from 1967

World production of fish meal in 1968 was an estimated 3,861,700 metric tons (4,256,800 short tons)--up 7 percent from 1967 and up 21 percent from 1966 (table 9). These comparisons do not include Mainland China, Japan, or the U.S.S.R. In 1966, Japan and the U.S.S.R. produced 587,000 metric tons of fish meal. 1967 and 1968 figures for these countries are not yet available. Fish meal production for Mainland China is not reported.

Eighty percent of the reported fish meal in 1968 was made by FEO countries. For the second year in a row, Peru made about half of the world's fish meal, and South Africa and South West Africa produced 12 percent of the world meal. The United States made about 5 percent of reported world meal in 1968.

FEO Fish Meal Production--Up 5 Percent from 1967

FEO countries produced an estimated 3,078,600 metric tons (3,393,500 short tons) of fish meal in 1968--up 5 percent from 1967 and up 19 percent from 1966. Peru made 62 percent of FEO fish meal in 1968--the same percent as the previous year. Peru's production in 1968 was 1,922,000 metric tons (2,118,600 short tons)--up 6 percent from 1967 and up 31 percent from 1966 (table 9).

Chile, South Africa, and South West Africa produced considerably more meal in 1968 than in 1967--43 percent more for Chile and 36 percent more for South Africa and South West Africa (table 9). On the other hand, Iceland's production in 1968 was less than half of that in 1967, and Norway's production was down nearly one-fifth from 1967. The lower availability of herring in 1968 was a major reason for the lower production in Iceland and Norway.

Table 9.--FEO[1] and total world production of fish meal, 1966-68

Country	1966		1967		1968[2]	
	Thousand metric tons	Percent	Thousand metric tons	Percent	Thousand metric tons	Percent
Angola	54.7	2.1	43.9	1.5	[3]45.0	1.5
Chile	194.2	7.5	130.9	4.5	187.2	6.1
Iceland	181.8	7.0	112.8	3.8	53.2	1.7
Norway	421.7	16.3	491.6	16.7	401.9	13.1
Peru	1,470.5	57.0	1,816.0	61.8	1,922.0	62.4
South Africa and South West Africa	257.6	10.0	345.1	11.7	469.2	15.2
Total FEO[4]	2,580.5	100.0	2,940.3	100.0	[3]3,078.6	100.0
Total world[5]	3,787.1	-	[2]3,614.8	-	3,861.7	-
Percent FEO is of world		68.1		81.3		79.7

[1] Fishmeal Exporters Organization: members are those countries listed in the table.
[2] Preliminary.
[3] Estimated.
[4] Figures may not add to total because of rounding.
[5] FEO countries plus Belgium, Canada, Denmark, France, Morocco, the Netherlands, Spain, Sweden, the United Kingdom, the United States, and West Germany. Production of about 347,000 tons by Japan and 240,000 tons by U.S.S.R. are included in the 1966 total. No Japanese or U.S.S.R. data are included for 1967 and 1968.

FEO Exports in 1968--Up One-Fifth from 1967

FEO countries exported an estimated 3,138,500 metric tons (3,459,600 short tons) in 1968--20 percent more than in 1967 and 46 percent more than in 1966 (tables 10 and 11). Monthly exports were an alltime high in November and December of last year, reaching an estimated 289,000 metric tons (318,600 short tons) in December. Nearly 30 percent of these December exports came to the United States. These high exports to the United States were an attempt to build up stocks before the longshoremen's strike resumed on December 20.

Peru accounted for two-thirds of FEO exports in 1968--a greater percent than any other year for which we have records. Peru shipped one-third more meal in 1968 than in 1967, and three-fifths more meal than in 1966. Nearly 28 percent of Peru's exports came to the United States in 1968--compared to 26 percent in 1967 and 19 percent in 1966.

The second major exporter was Norway, which shipped 432,000 metric tons (476,200 short tons) in 1968--down 11 percent from 1967 but up 62 percent from 1966. About 9 percent of Norway's meal came to the United States in 1968--compared to 21 percent in 1967 (table 11).

South Africa and South West Africa exported 353,400 metric tons (389,600 short tons) of fish meal in 1968, over half of which went to the United Kingdom. None of their exports came to the United States. Over half of Chile's exports came to the United States last year (table 11).

FEO Fish Meal Stocks on January 1, 1969--Down One-Third from 1968

Fish meal stocks held by FEO countries on January 1, 1969, were an estimated 553,600 metric tons (610,200 short tons)--down one-third from stocks held at the same time last year. Peru held 71 percent of FEO stocks on January 1 of this year--compared to 74 percent last year and 58 percent in 1967 (table 12).

Norway held 14 percent of FEO meal at the beginning of 1969--compared to 18 percent in 1968 and 26 percent in 1967. South Africa and South West Africa were the third largest holders of fish meal with 8 percent of total FEO stocks--more than double that held at the same time last year.

In 1967, Peru produced about 255,100 metric tons more than it exported, whereas in 1968 exports were about 161,200 metric tons more than production. However, total FEO exports for 1968 were only about 60,000 metric tons more than production. Another major factor contributing to the lower FEO stocks at the beginning of 1969 was the

Table 10.--Total FEO[1] exports of fish meal, and FEO exports to the United States, by month, 1966-68

Month	1966			1967			1968[2]		
	Total FEO exports	FEO exports to the United States[3]		Total FEO exports	FEO exports to the United States[3]		Total FEO exports	FEO exports to the United States[3]	
	Thousand metric tons	Thousand metric tons	Percent	Thousand metric tons	Thousand metric tons	Percent	Thousand metric tons	Thousand metric tons	Percent
January	198.2	8.0	4.0	180.3	34.2	19.0	279.5	79.1	28.3
February	173.7	19.3	11.1	203.5	36.0	17.7	283.8	39.9	14.0
March	208.8	26.3	12.6	190.6	62.2	32.6	260.9	44.7	17.1
April	181.4	32.6	18.0	198.5	41.5	20.9	259.8	52.8	20.3
May	165.3	27.6	16.7	231.1	31.6	13.7	246.4	56.7	23.0
June	184.9	37.6	20.3	234.1	33.6	14.4	277.8	68.7	24.7
July	191.4	39.5	20.6	214.0	39.2	18.3	277.5	77.0	27.7
August	164.2	48.6	29.6	224.2	63.1	28.1	198.9	71.0	35.7
September	156.2	35.7	22.8	194.9	45.3	23.2	230.1	37.0	16.1
October	156.5	28.5	18.2	219.1	40.4	18.4	248.4	35.5	14.3
November	141.3	30.0	21.2	247.9	52.9	21.3	[4] 286.2	59.7	20.8
December	226.8	23.9	10.5	280.1	61.3	21.9	[4] 289.0	84.6	29.3
Total[5]	2,148.7	357.7	16.6	2,618.4	541.3	20.7	[4] 3,138.5	706.8	22.5

[1]Fishmeal Exporters Organization: members are those countries listed in table 9.
[2]Preliminary.
[3]Based on imports of fish meal from FEO countries as reported by the U.S. Department of Commerce, Bureau of the Census.
[4]Estimated.
[5]Figures may not add to total because of rounding.

Table 11.--Total FEO[1] exports of fish meal, and FEO exports to the United States, by member country, 1966-68

Country	1966			1967			1968[2]		
	Total FEO exports	FEO exports to the United States[3]		Total FEO exports	FEO exports to the United States[3]		Total FEO exports	FEO exports to the United States[3]	
	Thousand metric tons	Thousand metric tons	Percent	Thousand metric tons	Thousand metric tons	Percent	Thousand metric tons	Thousand metric tons	Percent
Angola	53.6	0.5	0.1	37.8	-	-	[4]42.0	-	-
Chile	185.9	81.1	43.6	111.2	37.1	33.4	167.2	94.3	56.4
Iceland	172.7	-	-	135.0	-	-	60.6	-	-
Norway	266.4	19.1	7.2	487.5	102.7	21.1	432.0	37.2	8.6
Peru	1,304.5	251.0	19.2	1,560.9	401.5	25.7	2,083.2	575.3	27.6
South Africa and South West Africa	165.6	6.0	3.6	286.0	-	-	353.4	-	-
Total[5]	2,148.7	357.7	16.6	2,618.4	541.3	20.7	[4]3,138.5	706.8	22.5

[1]Fishmeal Exporters Organization: members are those countries listed in the table.
[2]Preliminary.
[3]Based on imports of fish meal from FEO countries as reported by the U.S. Department of Commerce, Bureau of the Census.
[4]Estimated.
[5]Figures may not add to total because of rounding.

Table 12.--FEO[1] fish meal stocks held January 1, 1967, 1968, and 1969

Country	1967		1968		1969[2]	
	Thousand metric tons	Percent	Thousand metric tons	Percent	Thousand metric tons	Percent
Angola	2.8	0.4	8.2	1.0	[3]9.6	1.7
Chile	16.1	2.5	19.5	2.4	27.1	4.9
Iceland	43.0	6.6	14.6	1.8	1.4	0.3
Norway	171.5	26.3	143.8	17.6	79.8	14.4
Peru	375.2	57.6	600.3	73.5	391.7	70.8
South Africa and South West Africa	42.7	6.6	30.6	3.7	44.0	7.9
Total[4]	651.4	100.0	817.1	100.0	[3]553.6	100.0

[1]Fishmeal Exporters Organization: members are those countries listed in the table.
[2]Preliminary.
[3]Estimated.
[4]Figures may not add to total because of rounding.

relatively high local use of fish meal in Peru, South Africa, and South West Africa in 1968. Together, these countries consumed nearly 50,000 metric tons, or 48 percent more meal in 1968 than in 1967.

The lower stocks held by Peru and other FEO countries at the end of 1968 and the beginning of 1969 compared with a year earlier, helped strenghten world prices of fish meal during that period.

Demand

Broiler Chick Placements in 1968--Up Slightly from 1967

In 1968, 2,630.2 million broiler chicks were placed on farms in the 22 major broiler-producing States (table 13). This number is slightly over 1 percent more than the number placed in 1967, and 12 percent more than the 1963-67 average. The U.S. Department of Agriculture estimates that broilers consumed about 12,122,000 tons of feed in 1968. If we assume that 70 to 80 percent of total available fish meal was used in broiler feed last year, then an estimated 741,000 to 847,000 tons of fish meal were used in broiler feed rations.

Table 13.--Broiler chick placements in 22 States, and average broiler price at the farm, by month, 1966-69

Month	1966		1967		1968		1969[1]	
	Chicks placed	Broiler price	Chicks placed	Broiler price	Chicks placed	Broiler price	Chicks placed	Broiler price
	Million	Cents/lb.	Million	Cents/lb.	Million	Cents/lb.	Million	Cents/lb.
January	191.6	16.3	192.0	13.9	195.9	13.5	200.3	14.3
February	199.0	16.4	204.1	15.4	199.4	14.6	210.9	15.0
March	201.3	17.2	217.6	14.3	261.1	14.6	282.3	15.3
April	269.6	15.8	272.9	13.8	216.2	14.2		
May	217.8	16.7	217.6	13.3	219.8	14.6		
June	216.6	16.1	214.8	13.5	275.6	15.0		
July	262.0	16.1	259.6	14.7	210.2	15.5		
August	192.6	15.7	199.9	12.9	249.9	14.8		
September	187.0	14.6	224.7	12.6	179.0	14.1		
October	235.3	13.2	175.0	12.2	185.4	12.8		
November	188.8	13.5	185.7	11.5	242.0	13.6		
December	232.7	12.0	230.8	11.6	195.7	13.4		
Total placements[2] and average price[3]	2,594.4	15.3	2,594.7	13.4	2,630.2	14.3		

[1] Preliminary.
[2] Figures may not add to total because of rounding.
[3] Weighted average.

Sources: Commercial Broilers: Annual Production and Weekly Placements, U.S. Department of Agriculture, Statistical Reporting Service, and Poultry and Egg Situation, U.S. Department of Agriculture, Economic Research Service.

This means that 6 to 7 percent of the broiler ration was fish meal last year. In 1967, 4.9 to 5.6 percent of the ration was fish meal, and in 1966, 3.8 to 4.4 percent was fish meal. A major factor contributing to the increased use of fish meal in broiler diets was a relatively low ratio between the price of fish meal and the price of soybean meal, which is a major competing feed ingredient.

Average Soybean Meal Price for 1968--Second Highest in 15 Years

The average monthly price of soybean meal at Decatur, Ill., throughout most of 1968 was at a relatively high level compared to previous years. The average annual price for 1968 was $85 per ton--the second highest average in the last 15 years (table 14). The high prices of soybean meal compared to fish meal favored the use of fish meal in animal feeds in 1968.

Table 14.--Average monthly price of soybean meal[1] at Decatur, Ill., 1964-69

Month	1964	1965	1966	1967	1968	1969
	Dollars per short ton					
January	85.40	75.40	85.00	89.30	81.30	79.50
February	82.60	77.20	86.20	85.20	80.20	78.40
March	82.30	76.10	80.00	83.70	80.40	80.10
April	80.00	78.40	82.40	80.70	80.90	
May	74.20	77.70	89.00	80.10	81.90	
June	73.20	85.10	101.00	87.20	89.10	
July	72.90	86.00	104.10	85.00	92.00	
August	71.00	80.50	106.10	86.90	94.50	
September	77.10	89.20	97.90	87.60	95.50	
October	76.80	80.80	91.50	78.20	85.30	
November	72.70	84.50	86.40	78.10	79.40	
December	75.50	78.30	92.70	79.40	79.40	
Average[2]	77.00	80.75	91.85	83.45	85.00	

[1]50 percent protein, bulk.
[2]Simple average.

Source: Feed Market News, U.S. Department of Agriculture, Consumer and Marketing Service, Grain Division.

Prices

Average Annual Price of Menhaden Meal--Up 6 Percent from 1967

The average annual price of bagged menhaden meal in 1968 was $145.30 per ton f.o.b. East Coast points--compared to $136.55 in 1967 (table 15 and figure 4). The average monthly price of menhaden meal reached a high of $149.65 per ton in July and then fell steadily to $140.50 in November. In the latter part of November, prices started to rise, and by the end of December had reached $148 per ton (table 15).

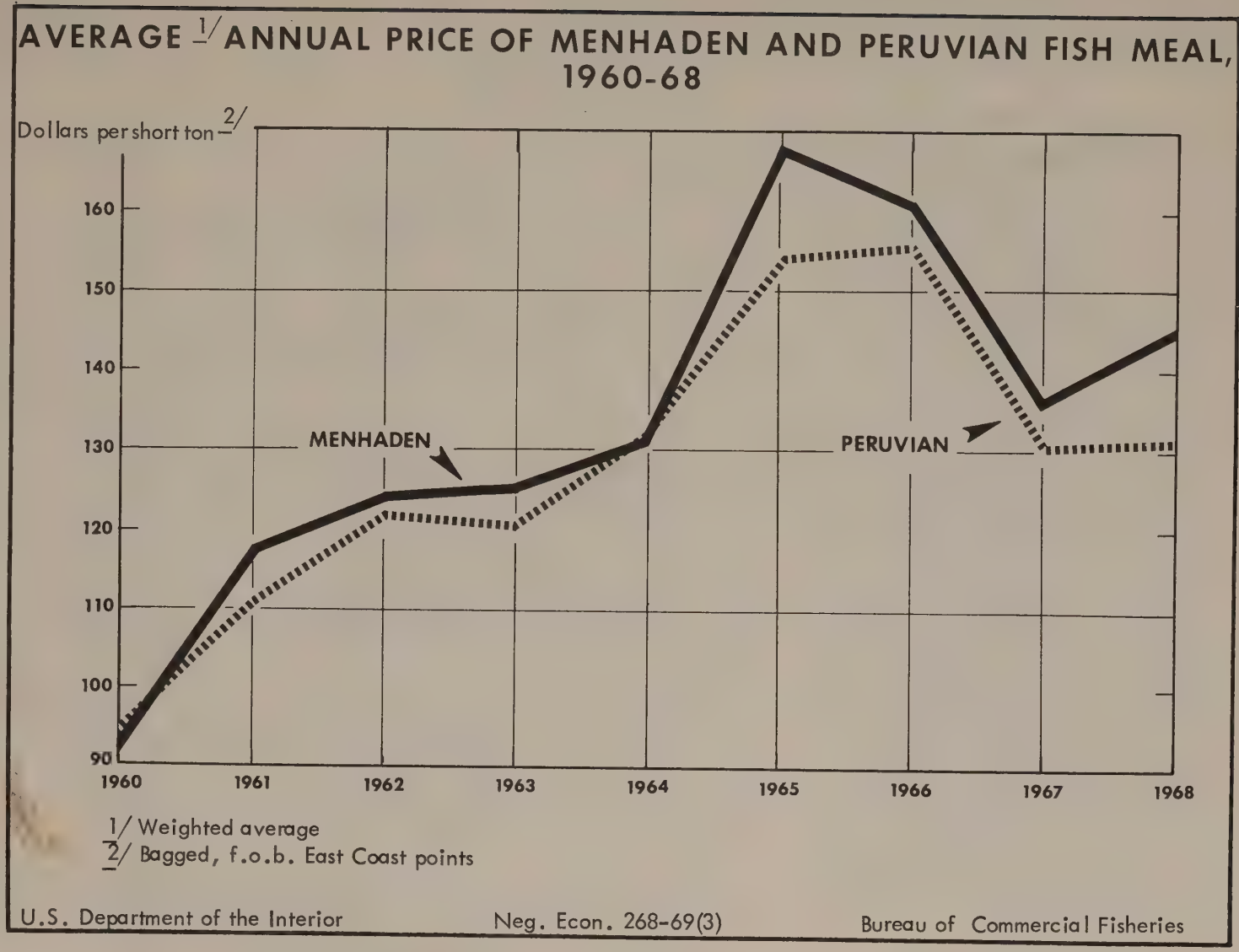
By the end of January, the nominal price of menhaden meal as quoted at New York City had risen to $153. Prices stayed at this level through the first week of March. New York had no supplies of menhaden meal the latter part of March.

Table 15.--Average monthly price of menhaden meal[1] f.o.b. East Coast points, 1964-69

Month	1964	1965	1966	1967	1968	1969
	Dollars per short ton					
January	132.00	144.15	[2]179.80	153.10	[2]131.00	149.25
February	130.00	146.25	[2]172.55	[2]154.00	[2]131.00	153.00
March	128.25	150.00	[2]170.60	[2]154.00	[2]131.00	153.00
April	128.00	153.00	[2]163.00	135.00	[2]131.00	
May	128.25	156.00	[2]153.80	135.80	[2]131.00	
June	129.80	160.90	160.35	139.00	149.00	
July	130.90	170.25	164.00	137.40	149.65	
August	131.00	172.10	169.00	137.10	149.00	
September	132.90	175.00	166.20	136.75	145.00	
October	140.20	185.40	160.00	136.00	141 60	
November	140.75	186.00	151.15	[2]132.00	140.50	
December	140.75	186.00	153.10	[2]131.60	145.10	
Average[3]	131.45	168.50	161.05	136.55	145.30	

[1] 60 percent protein, bagged, as quoted at New York City.
[2] Nominal price as presented in the Oil, Paint and Drug Reporter.
[3] Weighted average.

Sources: U.S. Department of the Interior, Bureau of Commercial Fisheries, and the Oil, Paint and Drug Reporter.


AVERAGE 1/ ANNUAL PRICE OF MENHADEN AND PERUVIAN FISH MEAL, 1960-68
Dollars per short ton 2/
160
150
140
130
120
110
100
90
MENHADEN
PERUVIAN
1960
1961
1962
1963
1964
1965
1966
1967
1968
1/ Weighted average
2/ Bagged, f.o.b. East Coast points
U.S. Department of the Interior
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Bureau of Commercial Fisheries

Figure 4

Average Price of Peruvian Meal--Up Only 80 Cents Per Ton from 1967

The average price of bagged Peruvian fish meal in 1968 was $130.95 per short ton f.o.b. East Coast ports--compared to $130.15 per ton in 1967 (table 16 and figure 4). The 1968 average was about $6 under the 1963-67 average. The average monthly price of Peruvian fish meal fell from $143.20 per ton in July to $129.20 in October. In November, prices started to rise and by the end of December had reached $139 per ton. At the end of January prices climbed to $141 per ton and stayed at that level through February. One reason for the rapid price rise at the end of 1968 was anticipated lower supplies due to the longshoremen's strike. How much meal the brokers were holding during the strike is not known.

Table 16.--Average monthly price of Peruvian fish meal[1] f.o.b. East Coast ports, 1964-69

Month	1964	1965	1966	1967	1968	1969
	Dollars per short ton					
January	133.25	141.60	173.00	148.20	120.20	139.50
February	133.25	144.90	170.90	140.00	119.00	141.00
March	132.40	142.70	165.80	134.50	116.00	140.50
April	126.00	148.40	153.75	130.50	115.20	
May	126.10	153.75	155.40	127.70	131.90	
June	125.70	166.50	155.50	131.25	140.00	
July	130.00	172.90	161.00	131.60	143.20	
August	132.90	181.00	161.00	131.50	137.90	
September	134.70	182.50	152.25	128.90	132.75	
October	140.00	184.90	143.10	124.30	129.20	
November	141.50	186.00	144.80	121.00	131.00	
December	141.50	180.25	152.50	121.00	138.10	
Average[2]	131.95	154.65	156.40	130.15	130.95	

[1]65 percent protein, bagged, as quoted at New York City.
[2]Weighted average.

OUTLOOK: APRIL-JUNE 1969

Demand

Two factors that are important in forecasting fish meal use in the United States are broiler placements and the relation between the price of fish meal and the price of soybean meal. The U.S. Department of Agriculture estimates that 815.3 million broiler chicks will be placed in the second quarter of 1969--7 percent more than in the same quarter last year. The ratio between the price of fish meal and the price of soybean meal in the first week of April was about 1.78:1. Based on a mathematical formula relating the use of fish meal in the United States to the above two factors, it is estimated that 220,000 to 280,000 tons of fish meal will be used in the second quarter of 1969.

If the fish meal-soybean meal price ratio were to decrease through either a decrease in the price of fish meal or an increase in the price of soybean meal, the use of fish meal probably would increase. For example, if the price ratio averaged 1.5:1 in the second quarter, then the use of fish meal could be as high as 300,000 tons.

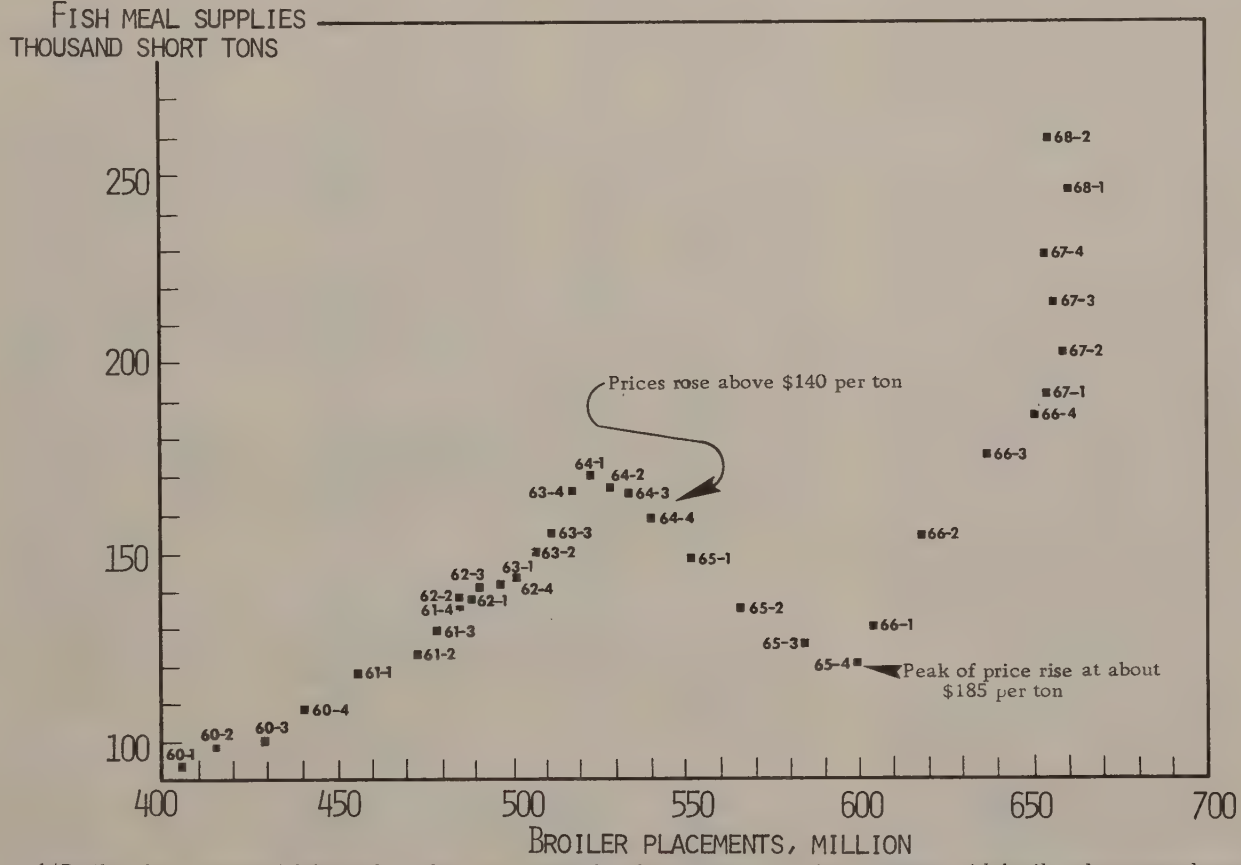
Of course, any increase in the price ratio could mean a decrease in fish meal use. The current high stocks of soybean meal and the anticipated higher production of soybeans in 1969/70 do not point to higher soybean meal prices in the near future.

Figure 5 illustrates the relation between the quarterly use of fish meal and broiler placements in the United States. The chart points up the increasing use of fish meal per broiler over the period 1960-68, with the exception of a period of relatively high fish meal prices in 1965 and 1966. Prices rose from an average of about $140 per ton beginning with the fourth quarter of 1964 to about $185 per ton in the fourth quarter of 1965. During that period, the use of fish meal declined.

Supply

The total amount of fish meal that will be available in the United States in the second quarter of 1969 will depend on the amount of meal which is produced in the United States in that quarter and on the amount of meal which comes to the United States from other countries.

RELATION BETWEEN FISH MEAL SUPPLIES (PRODUCTION PLUS IMPORTS) AND BROILER PLACEMENTS IN THE UNITED STATES 1/



1/ Broiler placements and fish meal supplies are expressed as four-quarter moving averages, with broiler placements lagged one quarter. Numbers indicate year and quarter at which the moving average of fish meal supplies is centered; average of broiler placements is for previous quarter.

U.S. Department of the Interior | Neg. Econ. 272-69(4) | Bureau of Commercial Fisheries

Figure 5

U.S. production of fish meal in the second quarter of 1967 was 60,800 tons and in 1968 was 54,600 tons. In the first 2 months of 1969, production of fish meal was up 48 percent from the same period in 1968. However, production in the first few months of the year normally is not a good indicator of the level of production for the remainder of the year. We expect production for the second quarter of 1969 will be at least 55,000 tons and that menhaden meal will comprise at least 65 percent of total fish meal production.

The major foreign supplier of fish meal is Peru, which in the second quarter of 1967 provided 81 percent of the imports and in 1968, 78 percent of the imports. FEO countries supplied 91 percent of total imports in the second quarter of 1967 and 92 percent in 1968. We expect that Peru and the other FEO countries will continue to supply a major portion of the fish meal in the second quarter of 1969.

On March 1, 1969, stocks of fish meal held by Peru were an estimated 314,000 metric tons (346,100 short tons)-- less than half the stocks on March 1, 1968. If the rate of fish catch as experienced in the first week of March continues throughout the month, and if exports and local use are about the same as they were last year, then the amount of fish meal on hand in Peru at the beginning of the second quarter of 1969 could be 310,000 to 350,000 metric tons.

In 1967, Peru produced 468,700 metric tons of fish meal in April, May, and half of June--or an average of about 187,500 tons per month. (A veda, or closed season, was administered beginning June 14.) In April and May of last year, Peru produced 403,300 metric tons of meal--or an average of 201,600 tons a month. (The veda was June 1 to September 1.)

If a closed season is called for around June 1, 1969, and if production averages 200,000 metric tons a month, then the amount of fish meal available for exports and local use in the second quarter of 1969 would be 710,000 to 750,000 metric tons. If Peru consumes about 15,000 tons in the second quarter of 1969, then the amount of fish meal available for export in the second quarter would be 695,000 to 735,000 metric tons. It is estimated that the amount actually exported in this period would be 500,000 to 600,000 tons, so that stocks at the end of the second quarter would be anywhere from 95,000 to 235,000 metric tons. If there is no fishing in June, we expect stocks to be nearer the lower end of this range than the upper end. The last time stocks were below 235,000 tons was in December 1965.

If Peru exports 500,000 to 600,000 metric tons in the second quarter of 1969, and if the ratio of the price of Peruvian fish meal

at New York to the price at Hamburg, Germany in the first quarter of 1969 is about 1.1:1, then exports from Peru to the United States in the second quarter could be expected to be at least 150,000 metric tons (165,000 short tons) and possibly as much as 200,000 metric tons (220,000 short tons).

Recent data indicate that the Norwegian fishery may increase over last year. Total fish catch from January 1 to February 22, 1969, was 244,700 metric tons--up 67 percent over the same period last year. Of this total, capelin accounted for 96 percent, mackerel about 3 percent, and herring less than 1 percent. We expect that Norway and the other FEO countries (except Peru) will supply at least the same amount of meal in the second quarter of 1969 as they did in 1968--about 30,000 short tons.

If Peru does ship 165,000 to 220,000 short tons of fish meal to the United States in the second quarter of 1969, and if the other FEO countries send at least 30,000 tons, then total imports from FEO countries would be 195,000 to 250,000 short tons. If the FEO countries supply about the same percent of fish meal imports in 1969 as they did in 1967 and 1968, then total U.S. imports in the second quarter of 1969 would be 210,000 to 270,000 short tons.

We estimate that the total supply of fish meal available for use in the United States in the second quarter of 1969 will be at least 265,000 short tons and possibly as high as 325,000 tons. Last year in the second quarter, total supplies were 268,200 tons.

In the previous section on fish meal demand, we estimated that 220,000 to 280,000 tons of fish meal would be used in April-June 1969 assuming current prices of fish meal and soybean meal hold throughout that period. If more than 280,000 tons are supplied in the second quarter, prices of fish meal probably will not average much more than $140 per ton for Peruvian meal and $150 for menhaden meal.

FISH SOLUBLES

1968 REVIEW

Supply

Total Supply of Fish Solubles in 1968--A Record Low

The total amount of fish solubles available for use in the United States last year was 76,800 tons--down 2 percent from 1967 and the

lowest amount recorded in recent years (table 17). Domestic production accounted for 98 percent of total fish solubles, whereas imports were 2 percent. In 1967, U.S. production was 95 percent and imports 5 percent.

Table 17.--Total fish solubles available in the United States: production plus imports, by month, 1962-69

Month	1962	1963	1964	1965	1966	1967	1968[1]	1969[1]
	Thousand short tons							
January	2.1	1.7	1.9	1.8	1.6	2.0	0.6	0.8
February	3.8	1.7	1.4	2.8	1.8	1.2	0.7	
March	2.3	3.1	1.2	1.3	3.8	2.1	2.3	
April	3.6	4.3	4.3	3.9	5.0	6.6	4.3	
May	14.7	16.1	13.2	10.9	9.4	7.2	6.4	
June	22.5	14.4	19.1	18.0	15.3	13.6	11.2	
July	21.3	15.5	19.5	18.7	14.1	12.5	14.9	
August	16.4	19.0	14.8	18.2	12.8	12.3	12.0	
September	12.4	11.7	10.1	9.0	9.9	6.8	10.2	
October	13.6	7.8	5.3	6.8	5.4	5.1	6.7	
November	4.7	5.1	4.0	5.9	5.9	5.5	4.5	
December	2.1	6.7	3.0	2.6	2.6	3.5	3.0	
Total[2]	119.5	107.3	97.8	99.9	87.7	78.3	76.8	

[1]Preliminary.
[2]Figures may not add to total because of rounding.

U.S. Production of Solubles--Up Slightly from 1967

The United States produced 75,100 tons of fish solubles in 1968--up slightly from the amount produced in 1967 but down 16 percent from the 1963-67 average (table 18 and figure 6). About 75 percent of the solubles were made from menhaden in 1968--compared to 69 percent in 1967 and about the same as the 1963-67 average. About 55 percent of the menhaden solubles were made in the Gulf Coast area in 1968--compared to 57 percent in 1967.

U.S. Imports of Fish Solubles--Less Than Half of Imports in 1967

The United States imported 1,800 tons of fish solubles--compared to 3,700 tons in 1967 and a 1963-67 average of 4,900 tons (table 19). The decrease in imports was the main reason for the decrease in total supplies.

Table 18.--U.S. production of fish solubles by month, 1962-69

Month	1962	1963	1964	1965	1966	1967	1968[1]	1969[1]
	Thousand short tons							
January	1.8	1.6	1.5	1.2	1.4	1.5	0.5	0.8
February	1.6	1.5	0.9	1.1	1.8	1.1	0.6	
March	2.0	2.0	1.0	1.1	3.6	2.0	1.6	
April	3.3	4.1	3.9	3.6	3.6	4.8	4.3	
May	14.4	15.7	12.9	10.7	8.2	6.9	6.3	
June	21.6	14.1	18.9	17.8	15.1	13.5	11.1	
July	21.0	15.2	18.0	18.6	13.9	12.4	14.8	
August	16.0	18.7	14.7	18.0	12.7	12.2	11.9	
September	12.2	11.5	9.9	8.8	9.8	6.6	10.0	
October	13.3	7.4	5.1	6.7	5.3	4.9	6.5	
November	4.3	4.9	3.8	4.7	5.6	5.3	4.4	
December	1.7	3.5	2.7	2.5	2.4	3.4	2.9	
Total[2]	113.2	100.2	93.3	94.8	83.4	74.7	75.1	

[1]Preliminary.
[2]Figures may not add to total because of rounding.

Table 19.--U.S. imports of fish solubles by month, 1962-69

Month	1962	1963	1964	1965	1966	1967	1968	1969[1]
	Thousand short tons							
January	0.3	0.1	0.4	0.6	0.2	0.5	0.1	[2]
February	2.2	0.2	0.5	1.7	[2]	0.1	0.1	-
March	0.3	1.1	0.2	0.2	0.2	0.1	0.7	
April	0.3	0.2	0.4	0.3	1.4	1.8	0.1	
May	0.3	0.4	0.3	0.2	1.2	0.3	0.1	
June	0.9	0.3	0.2	0.2	0.2	0.1	0.1	
July	0.3	0.3	1.5	0.1	0.2	0.1	0.1	
August	0.4	0.3	0.1	0.2	0.1	0.1	0.1	
September	0.2	0.2	0.2	0.2	0.1	0.2	0.2	
October	0.3	0.4	0.2	0.1	0.1	0.2	0.2	
November	0.4	0.2	0.2	1.2	0.3	0.2	[2]	
December	0.4	3.2	0.3	0.1	0.2	0.1	0.1	
Total[3]	6.3	7.1	4.5	5.1	4.3	3.7	1.8	

[1]Preliminary.
[2]Less than 50 tons.
[3]Figures may not add to total because of rounding.

Demand

The lower imports in 1968 were due to a relatively weak U.S. demand for fish solubles. Even though prices of fish solubles remained quite favorable relative to prices of other competing feed ingredients, the market for solubles was extremely dull, particularly in the last three quarter of 1968. One reason for the lower use of fish solubles is the reluctance of feed mixers to change their operations to handle the relatively small amount of solubles that would go into their rations.

Prices

In 1968, the average monthly price of menhaden solubles dropped from $63.75 per ton f.o.b. East Coast plants in February to $51.25 in December (table 20 and figure 6). Prices remained at the December level through the first 2 months of 1969, then fell to an average of $49.40 per ton in March.

The weighted average price of solubles in 1968 was $52.90 per ton--the lowest annual average since 1961 when the price was $47.25 (figure 6).

Table 20.--Average monthly price of menhaden solubles[1] f.o.b. East Coast plants, 1964-69

Month	1964	1965	1966	1967	1968	1969
	Dollars per short ton					
January	75.00	58.60	66.25	80.85	60.50	51.25
February	75.00	59.40	66.50	79.00	63.75	51.25
March	62.25	61.25	66.70	70.75	61.25	49.40
April	62.25	56.25	68.75	64.60	56.25	
May	62.25	53.75	68.75	64.00	54.05	
June	62.25	55.75	68.75	64.40	53.75	
July	62.25	56.85	68.75	64.05	53.50	
August	61.95	60.00	68.75	62.85	52.50	
September	61.20	61.25	72.50	61.25	51.90	
October	61.05	63.95	78.75	60.75	51.50	
November	61.25	65.25	79.25	60.00	51.55	
December	61.25	66.25	81.90	60.00	51.25	
Average[1]	62.00	58.30	70.75	63.25	52.90	

[1]In tank cars; prices quoted at New York City.
[2]Weighted average.

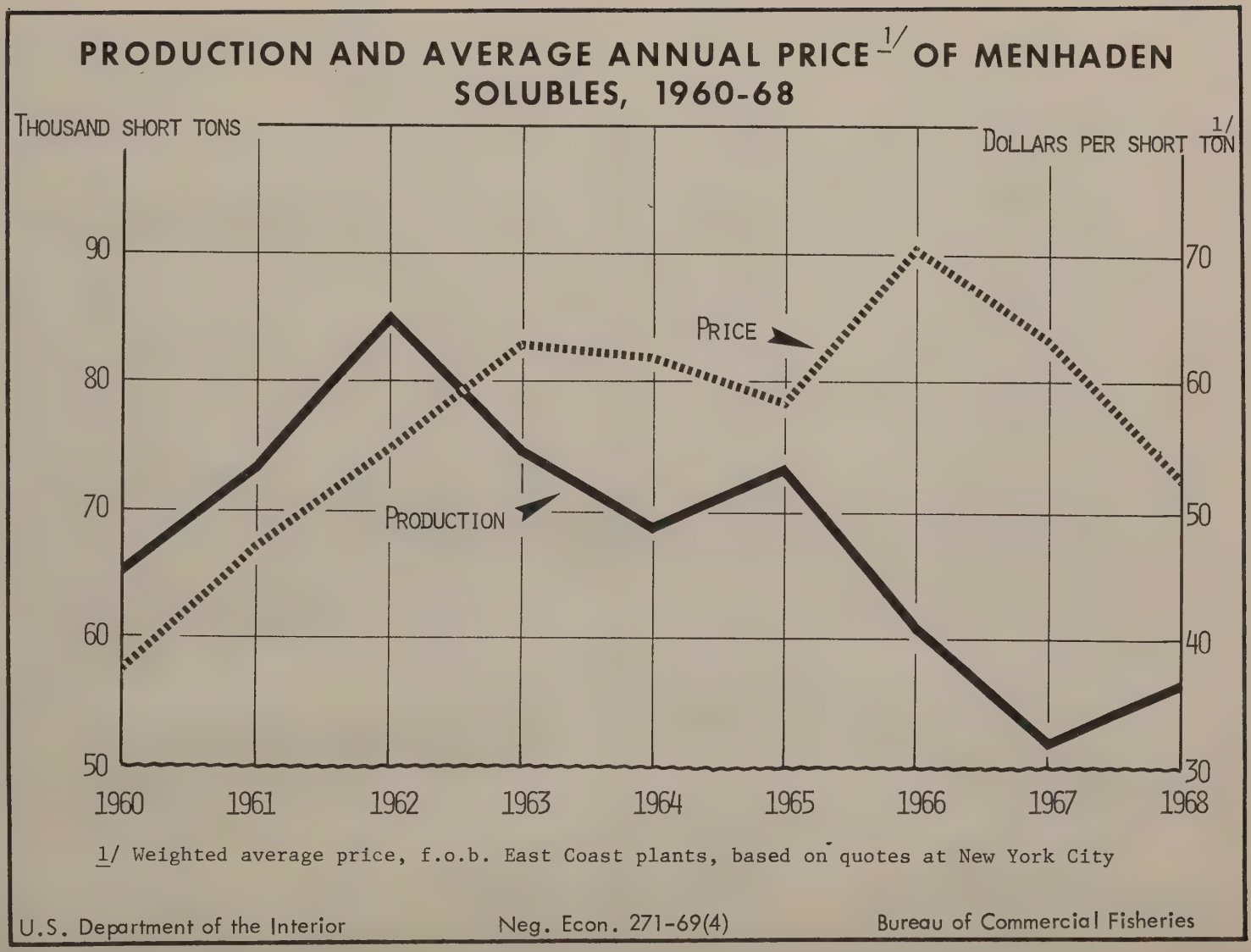

PRODUCTION AND AVERAGE ANNUAL PRICE 1/ OF MENHADEN SOLUBLES, 1960-68
THOUSAND SHORT TONS
DOLLARS PER SHORT TON 1/
90
80
70
60
50
70
60
50
40
30
PRICE
PRODUCTION
1960
1961
1962
1963
1964
1965
1966
1967
1968
1/ Weighted average price, f.o.b. East Coast plants, based on quotes at New York City
U.S. Department of the Interior
Neg. Econ. 271-69(4)
Bureau of Commercial Fisheries

Figure 6

OUTLOOK: APRIL-JUNE 1969

Demand

The average price of menhaden solubles as quoted at New York City was $51.25 per ton f.o.b. East Coast plants the first 2 months of 1969, and was $1.85 per ton lower in March. At these low prices it would appear that fish solubles would be a fairly good buy for use in animal feed rations. One reason which has been given for the lower use of fish solubles is that solubles are more difficult to handle in the mixing operation than some other feed ingredients. However, if prices continue at a low level, feed mixers probably should consider using fish solubles in animal feed rations.

Supply

The United States produced about 25,000 tons of fish solubles in the second quarter of 1967 and about 22,000 tons in 1968. Production in the second quarter of 1969 is expected to be at least as high as the 1968 level. Solubles produced from menhaden will comprise about 70 percent of total production. Imports in the second quarter of 1967 were 2,200 tons and in 1968 were only 200 tons. With low domestic prices, imports are expected to be less than 1,000 tons in the second quarter of 1969.

Total supply (production plus imports) of fish solubles in the second quarter of 1969 is estimated to be 22,000 to 25,000 tons.

FISH OIL

1968 REVIEW

Supply

Total Supplies of Fish Oil in 1968--Up 14 Percent from 1967

The total amount of fish oil available for export and domestic use in 1968 was 257.7 million pounds--up 14 percent from the amount available in 1967 but down 6 percent from the 1963-67 average (table 21). About 31 percent of 1968 supplies represented stocks on hand

at the beginning of 1968, 67 percent was domestic production, and 2 percent was imports. In 1967, beginning stocks were 44 percent of total supplies, production was 53 percent, and imports were 3 percent.

Fish Oil Stocks Increased in 1968

At the beginning of 1968, stocks of fish oil were 80 million pounds--one-fifth less than stocks held at the beginning of 1967 (table 21). However, because production was much heavier than domestic use and exports during the year, stocks increased to 104.6 million pounds by the end of 1968--31 percent more than stocks at the beginning of the year (table 21).

Table 21.--Fish oil in the United States: beginning stocks, production, imports, domestic use, exports, and ending stocks, 1960-68[1]

Year	Beginning stocks	Production	Imports	Domestic use	Exports	Ending stocks
			Million pounds			
1960	66.0	205.9	8.9	56.8	143.6	52.4
1961	52.4	254.6	8.4	64.8	122.5	94.0
1962	94.0	247.5	10.8	62.9	123.0	125.9
1963	125.9	183.7	8.6	52.1	262.3	96.9
1964	96.9	177.0	11.8	47.7	151.5	70.9
1965	70.9	192.8	6.0	44.5	103.8	100.4
1966	100.4	162.7	12.7	38.8	77.2	99.4
1967	99.4	119.9	7.0	35.8	76.8	80.0
1968[2]	80.0	171.7	6.0	30.0	65.1	104.6

[1] Beginning stocks plus production plus imports minus domestic use minus exports will not equal ending stocks because of discrepancies in reporting.
[2] Preliminary.

Sources: Bureau of Commercial Fisheries and Current Industrial Reports: Fats and Oils, Series M20K, U.S. Department of Commerce, Bureau of the Census.

U.S. Fish Oil Production--Up 43 Percent from 1967

The United States produced 171.7 million pounds of fish oil in 1968--43 percent more than the amount produced in 1967 and 3 percent more than the 1963-67 average (table 22 and figure 7). The above production does not include whale oil, which will be discussed in a

later section. Eighty-eight percent of the fish oil was made from menhaden in 1968--compared to 84 percent in 1967 (table 22).

The average oil yield of menhaden in 1968 was 11 percent, i.e., 11 pounds of oil was processed from every 100 pounds of menhaden. The oil yield in 1967 was 9 percent, and the 1963-67 average was 10 percent. One reason for the higher oil yield in 1968 was that most of the menhaden caught were in the 2-year age class whereas in 1967 most were in the 1-year class.

About 20 million pounds of oil were produced from alewives, anchovies, herring, mackerel, tuna scrap, and other fish in 1968 (table 22). About the same amount of oil was made from these fish in previous years.

Imports of Fish Oil--Down 14 Percent from 1967

As indicated in table 21, imports of fish oil into the United States have varied widely over the last 9 years. In 1968, imports were 6 million pounds--14 percent below imports in 1967 and tied with 1965 as the lowest in the last ten years.

Table 22.--U.S. production of fish oil by raw material source, 1963-67 average, 1967, and 1968

Source	1963-67 average		1967		1968[1]	
	Million pounds	Percent	Million pounds	Percent	Million pounds	Percent
Alewives	0.6	0.4	1.8	1.5	2	-
Groundfish	1.4	0.8	-	-	2	-
Herring	7.6	4.5	5.7	4.8	2	-
Menhaden[3]	149.2	89.2	101.4	84.5	152.0	88.5
Tuna, mackerel, and anchovies	5.3	3.2	6.2	5.2	5.4	3.2
Unclassified	3.1	1.9	4.8	4.0	14.3	8.3
Total	167.2	100.0	119.9	100.0	171.7	100.0

[1]Preliminary.
[2]Included in "unclassified."
[3]Includes a small quantity of other species.

Demand

Industrial Use of Fish Oil in 1968--Down 16 Percent from 1967

The use of fish oil in the United States has declined steadily since 1961 (table 21). About 30 million pounds of fish oil were used last year, mostly in the production of fatty acids, plastics, and resins. This amount is 16 percent below 1967 and 32 percent below the 1963-67 average. Lubricants, paint, varnish, and other industrial products were also outlets for fish oil. The lower use of fish oil in 1968 is difficult to explain in light of the relatively high stocks and low prices throughout most of the year.

Exports of Fish Oil in 1968--Down 15 Percent from 1967

U.S. exports of fish oil also have declined the last few years (table 21). Exports of fish oil in 1968 were 65.1 million pounds--down 15 percent from 1967 and less than half the 1963-67 average (table 21). Ninety-eight percent of the fish oil exported in 1968 was menhaden oil.

Forty-seven percent of United States exports went to Sweden in 1968--compared to 27 percent in 1967 (table 23). About 29 percent of exports went to the Netherlands--compared to nearly 50 percent in 1967. In 1968, exports to Sweden were $1\frac{1}{2}$ times what they were in 1967, and exports to the Netherlands were about one-half of 1967 exports. Only 5,000 pounds of fish oil were sent to the United Kingdom in 1968--compared to 6.6 million pounds in 1967 (table 23). Devaluation of the currency in the United Kingdom probably was a major reason for the drop in exports to that country.

One-third of the fish oil exported in 1968 was shipped in December. Almost all of the 21.8 million pounds of fish oil exported in December 1968 went to the Netherlands and West Germany. The sudden increase in exports to these two countries could possibly be due to an anticipation of a tax on imports which was being considered by the EEC.

Table 23.--U.S. exports of fish oil by country of destination, 1963-67 average, 1967, and 1968

Country	1963-67 average		1967		1968[1]	
	Million pounds	Percent	Million pounds	Percent	Million pounds	Percent
Canada	2.4	1.8	0.3	0.4	1.6	2.5
Netherlands	27.4	20.4	37.1	48.3	19.0	29.1
Norway	10.2	7.6	-	-	-	-
Sweden	43.3	32.2	20.4	26.6	30.6	47.0
United Kingdom	24.4	18.2	6.6	8.6	[2]	-
West Germany	19.0	14.1	8.1	10.6	13.7	21.1
Other	7.6	5.7	4.2	5.5	0.2	0.3
Total[3]	134.3	100.0	76.8	100.0	65.1	100.0

[1]Preliminary.
[2]Less than 50,000 pounds.
[3]Figures may not add to total because of rounding.

Prices

Menhaden Oil Prices--On the Up-Turn

The average monthly price of menhaden oil as quoted at New York City, declined steadily from 9.75 cents per pound f.o.b. East Coast plants in May 1966 to 4.30 cents per pound in the first part of December 1968 (table 24 and figure 7). The average annual price of menhaden oil in 1968 was 4.70 cents per pound--the lowest in 6 years. The low fish oil prices in 1968 followed the general pattern of prices of most edible and inedible oils throughout the world. The low prices were brought about by relatively high stocks of these oils, especially in Europe.

In the last half of December, the price of menhaden oil reversed its downward trend and by the end of March had reached an average of about 5.30 cents per pound.

Table 24.--Average monthly price of menhaden oil[1] f.o.b. East Coast plants, 1964-69

Month	1964	1965	1966	1967	1968	1969
	-Cents per pound-					
January	8.40	9.15	9.50	8.90	6.00	4.70
February	8.35	9.50	9.70	8.90	6.10	5.00
March	8.50	9.50	9.75	8.60	5.75	5.20
April	8.75	9.50	9.75	7.20	5.35	
May	8.50	9.45	9.75	6.90	5.25	
June	8.65	9.15	9.60	6.95	5.25	
July	8.75	8.95	9.40	6.70	4.85	
August	8.80	9.30	9.00	6.00	4.55	
September	9.05	9.50	9.45	5.80	4.40	
October	9.20	9.50	9.45	6.00	4.45	
November	9.40	9.50	9.20	6.00	4.40	
December	9.40	9.50	8.90	6.00	4.40	
Average[2]	8.80	9.25	9.40	6.40	4.70	

[1]Crude oil in tank cars; prices quoted at New York City.
[2]Weighted average.

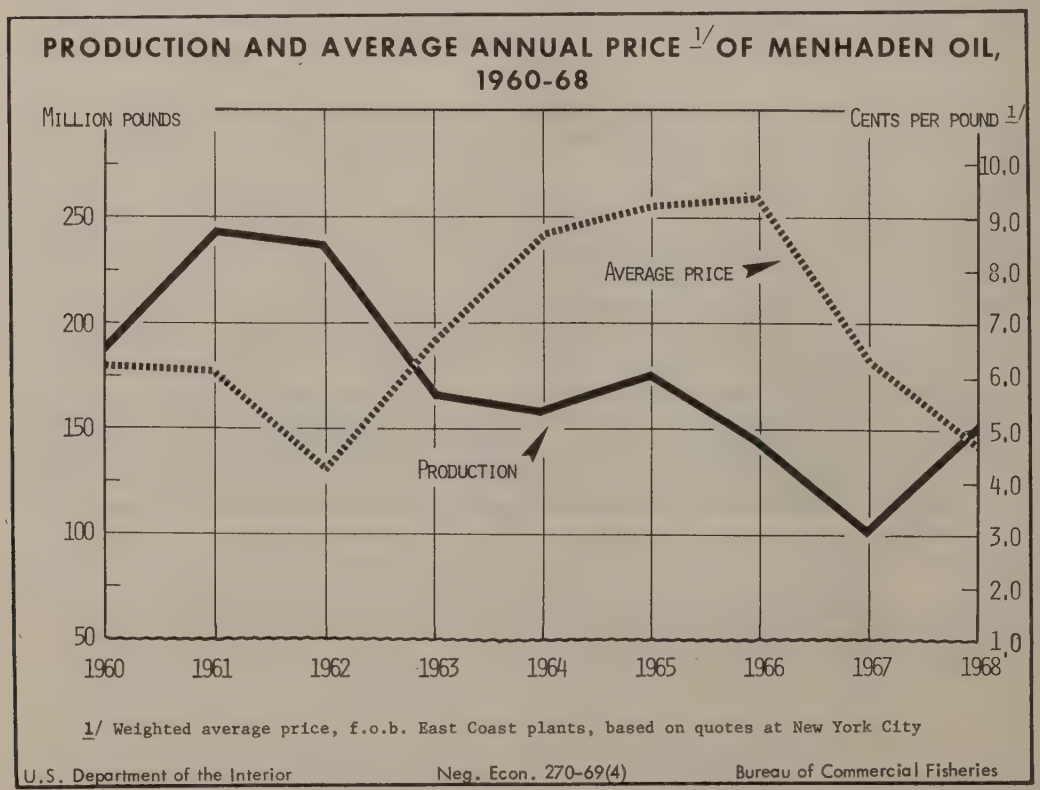


Figure 7

OUTLOOK: APRIL-JUNE 1969

Demand

The domestic use of fish oil in the second quarter of 1967 was 10.5 million pounds and in 1968 was 7.6 million pounds. Mathematical formulas relating domestic use of fish oil to the ratios of the price of fish oil to the prices of tall, tung, and linseed oil respectively, indicate that fish oil use could be anywhere from 7 to 12 million pounds in the second quarter of 1969.

Exports of fish oil in the second quarter of 1967 and 1968 were less than 1 million pounds. Exports in the second quarter of 1969 probably will be in line with this figure. Heavy competition from soybean oil and other food fats and oils is expected to continue.

Supply

If production, exports, and domestic use of fish oil in the first quarter of 1969 develop as in the same quarter in the two previous years, then stocks at the beginning of the second quarter could be expected to be 75 to 80 million pounds. Although production figures for the first 2 months of 1969 indicate that oil production is running about one-fourth below production in 1968, we expect that production in the second quarter of 1969 will be at least as high as in the second quarter of last year--35.5 million pounds.

WHALE OIL

1968 REVIEW

Supply

Total Available Whale Oil in 1968--Up 13 Percent from 1967

The total amount of whale oil available for use in 1968 was 127.2 million pounds--up 13 percent from 1967 but down 4 percent from the 1963-67 average. About 52 percent of the total whale oil in 1968 consisted of beginning stocks, 1 percent was domestic production, and 47 percent was imports. This breakdown was nearly the same as in 1967 and the average for 1963-67.

Whale Oil Stocks at the End of 1968--Lowest in Recent Years

Stocks of whale oil decreased from 66.3 million pounds at the beginning of 1968 to 51.2 million pounds at the end of 1968. These were the lowest end-of-year stocks since 1961 when stocks were 38.9 million pounds.

U.S. Whale Oil Production--Down Two-Fifths from 1967

The United States processed about 1.5 million pounds of whale oil in 1968--compared to 2.5 million pounds in 1967 and the 1963-67 average of 2.4 million pounds (table 25). None of the 1968 production was sperm oil.

Table 25.--Whale oil in the United States: beginning stocks, production, imports, domestic use, exports, and ending stocks, 1960-68[1]

Year	Beginning stocks	Production	Imports	Domestic use	Exports	Ending stocks
			Million pounds			
1960	47.7	3.3	37.5	46.9	1.4	31.9
1961	31.9	3.5	60.5	46.6	1.2	38.9
1962	38.9	2.6	69.2	35.2	2.7	56.5
1963	56.5	2.1	67.5	36.1	5.6	71.5
1964	71.5	3.2	58.9	33.6	5.6	69.0
1965	69.0	2.7	77.1	34.8	5.9	84.9
1966	84.9	1.4	58.2	29.0	4.4	59.1
1967	59.1	2.5	51.3	37.2	1.8	66.3
1968[2]	66.3	1.5	59.4	39.9	4.1	51.2

[1] Beginning stocks plus production plus imports minus domestic use minus exports will not equal ending stocks because of discrepancies in reporting.
[2] Preliminary.

Sources: Bureau of Commercial Fisheries and Current Industrial Reports: Fats and Oils, Series M20K, U.S. Department of Commerce, Bureau of the Census.

Whale Oil Imports--Up 16 Percent from 1967

The United States imported 59.4 million pounds of whale oil in 1968--up 16 percent from 1967 but down 5 percent from the 1963-67

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average. About 55 percent of the imports in 1968 were from Japan--compared to 12 percent in 1967 and a 1963-67 average of 40 percent (table 26). One-fifth of U.S. imports came from Peru in 1968--compared to about one-seventh in 1967. No oil came from the Netherlands last year, whereas in 1967 two-fifths of U.S. imports were from that country.

Table 26.--U.S. imports of whale oil by country of origin, 1963-67 average, 1967, and 1968

Country	1963-67 average		1967		1968[1]	
	Million pounds	Percent	Million pounds	Percent	Million pounds	Percent
Japan	24.9	39.8	6.0	11.6	32.8	55.3
Netherlands	8.2	13.1	20.4	39.7	-	-
Peru	10.7	17.1	7.0	13.6	11.7	19.8
Other	18.8	30.0	18.0	35.1	14.8	24.9
Total[2]	62.6	100.0	51.3	100.0	59.4	100.0

[1]Preliminary.
[2]Figures may not add to total because of rounding.

Demand

Domestic Use of Whale Oil--Up 7 Percent from 1967

The United States used 39.9 million pounds of whale oil in 1968 in the production of lubricants and similar oils, and other inedible products (table 25). This amount was 7 percent more than the amount used in 1967 and 17 percent more than the 1963-67 average.

U.S. Exports of Whale Oil--1-1/3 More Than 1967 Exports

The United States exported 4.1 million pounds of whale oil in 1968--up 128 percent from 1967 but down 13 percent from the 1963-67 average (table 25).

OUTLOOK: APRIL-JUNE 1969

Demand

The amount of whale oil used annually in the United States has increased steadily the last 3 years--rising from 29 million pounds in 1966 to nearly 40 million pounds in 1968. Second quarter use has also increased--from 7.3 million pounds in 1966 to 10.9 million pounds in 1968. If this trend were to continue into 1969, nearly 13 million pounds would be used in the second quarter.

Whereas the domestic use of whale oil in the second quarter has increased in recent years, exports have decreased--falling from 3.1 million pounds in 1965 to 0.4 million pounds in 1968.

The Bureau of Commercial Fisheries will conduct economic analyses of the market and price structure of whale oil in the coming months. Results of these studies should help explain the variation in domestic and foreign use and prices of whale oil.

Supply

Except for 1967, annual production and second quarter production of whale oil have declined the last 5 years. Second quarter production in 1968 was only 400,000 pounds. The 5-year trend would indicate that production in the second quarter of 1969 would be less than 1 million pounds.

While annual imports of whale oil have varied over the last 5 years, second quarter imports have increased steadily--from 1.4 million pounds in 1964 to 28.7 million pounds in 1968.

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The Industrial Fishery Products Situation and Outlook is published four times a year in January, April, July, and October.

The next issue is scheduled for release in July 1969.

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Commercial Fisheries
Washington, D.C. 20240

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